Docket No. JJI0049USACON

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	Larry B. Gray	Conf. No.	: 2428
Appln. No.	:	10/791,345	Art Unit	: 3773
Filed	:	March 2, 2004	Examiner	: Vy Q. Bui
Title	:	AXIALLY FLEXIBLE STENT		

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Commissioner for Patents
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APPEAL BRIEF

Dear Sir:

I. Real Party in Interest

The real party in interest is Cordis Corporation, the assignee of the present invention.

II. Related Appeals and Interferences

Applicant knows of no appeals or interferences or any other prior or pending appeals, interferences or judicial proceedings directly related to or affected by or having a bearing on the decision in the present appeal.

III. Status of Claims

Claims 20-37 are pending in the present application. The claims were rejected in a Final Rejection dated July 14, 2010.

IV. Status of Amendments

There have been no amendments filed after Final Rejection. Claims 20-37 remain unchanged from their status as filed in the response dated May 5, 2007.

V. Subject of Claimed Subject Matter

The invention provides a stent with axial flexibility. In a preferred embodiment, the stent has a first end and a second end with an intermediate section between the two ends. The stent further has a longitudinal axis and comprises a plurality of longitudinally disposed bands, wherein each band defines a generally continuous wave along a line segment parallel to the longitudinal axis. A plurality of links maintains the bands in a tubular structure. In a further embodiment of the invention, each longitudinally disposed band of the stent is connected, at a plurality of periodic locations, by a short circumferential link to an adjacent band. The wave associated with each of the bands has approximately the same fundamental spatial frequency in the intermediate section, and the bands are so disposed that the waves associated with them are

spatially aligned so as to be generally in phase with one another. The spatially aligned bands are connected, at a plurality of periodic locations, by a short circumferential link to an adjacent band. In particular, at each one of a first group of common axial positions, there is a circumferential link between each of a first set of adjacent pairs of bands.

At each one of a second group of common axial positions, there is a circumferential link between each of a second set of adjacent rows of bands, wherein, along the longitudinal axis, a common axial position occurs alternately in the first group and in the second group, and the first and second sets are selected so that a given band is linked to a neighboring band at only one of the first and second groups of common axial positions.

In one embodiment of the invention, the spatial frequency of the wave associated with each of the bands is decreased in a first end region lying proximate to the first end and in a second end region lying proximate to the second end, in comparison to the spatial frequency of the wave in the intermediate section. The first end region may be located between the first end and a set of circumferential links lying closest to the first end and the second end region lies between the second end and a set of circumferential links lying closest to the second end. The widths of corresponding sections of the bands in these end regions, measured in a circumferential direction, are greater in the first and second end regions than in the intermediate section. Each band includes a terminus at each of the first and second ends and the adjacent pairs of bands are joined at their termini to form a closed loop.

In another embodiment of the invention, a stent is provided that has first and second ends with an intermediate section, the stent further having a longitudinal axis and providing axial flexibility. This stent includes a plurality of longitudinally disposed bands, where each band defines a generally continuous wave having a spatial frequency along a line segment parallel to the longitudinal axis, the spatial frequency of the wave associated with each of the bands being decreased in a first end region lying proximate to the first end and in a second end region lying proximate to the second end, in comparison to the spatial frequency of the wave in the

intermediate section. There is also provided multiple links for maintaining the bands in a tubular structure.

In yet another embodiment the widths of the sections of the bands, measured in a circumferential direction, are greater in the first and second end regions than in the intermediate section.

The following is an outline of the subject matter contained in independent claims 20 and 29:

First, as seen in claim 20, there is described a stent having a longitudinal axis and first and second ends with an intermediate section therebetween. (This is best seen in Figure 4.) The stent has an unexpanded and expanded configuration (contrast Figure 4 and 5). The stent has axial flexibility in its unexpanded configuration (as demonstrated in the schematic of Figures 1c and 1d.)

These are a plurality of circumferential springs disposed adjacent one another along the longitudinal axis. (These are seen in, for instance, Figures 4 and 6, and designated as 6.)

Each of the circumferential springs is connected to an immediately adjacent circumferential spring by a connector member (such as stent 7).

Each of the circumferential springs (6) comprises a plurality of circumferentially spaced struts (as seen in Figure 5) disposed generally along the longitudinal axis, each of said struts (6) having a first end portion and a second end portion and a curved portion generally placed along said longitudinal axis therebetween (as seen in Figure 6). A first end portion as a stent is connected to a second end portion of a first immediately adjacent strut and said second end portion is connected to a first end portion of a second immediately adjacent strut. (These are the stents touching the ends of springs.) A description of the stent is best taken at page 6, line 4 to page 7, line 3 of the specification.

Claim 29 is identical in all respects to claim 20, other than that the term "circumferential rings" is substituted with "circumferential springs". Clearly, the rings (6) operate as springs, partially in the unexpanded conditions, as they give greater flexibility to the stent.

VI. Grounds of Rejection to be Reviewed on Appeal

The sole grounds of rejection to be reviewed on appeal are whether claims 20-37 are unpatentable under 35 USC § 102(e) and 35 USC § 103 by the Globerman reference, U.S. Patent No. 5,776,161. (Applicants have filed a terminal disclaimer with this brief, and thereby obviated the obviousness-type double patenting objection.)

VII. Argument

1. *Are claims 20-37 patentable under 35 USC § 102(e) or 35 USC § 103 as being anticipated or obvious by Globerman?*

Claims 20-37 were rejected under 35 USC § 102(e) as anticipated by or, in the alternative, under 35 USC § 103(a) as obvious over Globerman, U.S. 5,776,161. It is respectfully submitted that the Examiner has oriented the stent in Globerman incorrectly. For instance, the "ring" of Figures 14-15 is *neither* a "cylindrical ring" nor a "cylindrical spring," as claimed. It does not lie along the longitudinal axis, but rather lies *orthogonal* to the longitudinal axis. This can best be seen in reviewing Figure 14 of Globerman or as in the markup provided by the Examiner in the Final Office Action. As a result, the alleged "connectors" (in Globerman) do not connect "a ring" or "a spring" at any of the end portions of the struts of Globerman. Simply put, in Globerman Figures 14-15, there are NO rings or springs oriented as claimed. As a result, the properly construed embodiment of Globerman does not anticipate or render obvious Claims 20-37. The proper orientation of the Globerman stent was recognized by the Examiner in the Advisory Action of March 1, 2010, but

seems to have been ignored in the present action; and the Examiner has reverted to his former (and improper) reading of Globerman.

2. The double patenting rejection

A Terminal Disclaimer is filed herewith; it should overcome all the double patenting rejections.

VIII. Conclusion

Applicants herewith respectfully request allowance of claim 20-37.

Respectfully submitted,

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Claims

1-19. (Canceled)

20. (Previously amended) A stent having a longitudinal axis and first and second ends with an intermediate section therebetween, the stent having an unexpanded and expanded configuration, the stent having axial flexibility in its unexpanded configuration and comprising:

a plurality of circumferential springs disposed adjacent one another along the longitudinal axis,

each of said circumferential springs connected to an immediately adjacent circumferential spring by a generally straight connector member;

each of said circumferential springs comprising a plurality of circumferentially spaced struts disposed generally along the longitudinal axis, each of said struts having a first end portion and a second end portion and a curved portion therebetween, ~~a~~ said curved portion generally placed along said longitudinal axis of the stent, said first end portion being connected to a second end portion of a first immediately adjacent strut, and said second end portion being connected to a first end portion of a second immediately adjacent strut.

21. (Previously presented) A stent according to claim 20, wherein said curved portion includes at least two curves.

22. (Previously presented) A stent according to claim 20, wherein the stent is a balloon expandable coronary stent.

23. (Previously presented) A stent according to claim 22, wherein the curved portions of said adjacent struts in each circumferential spring are generally in phase with one another.

24. (Previously presented) A stent according to claim 20, wherein the first and second end portions of said struts are curved.

25. (Previously presented) A stent according to claim 20, wherein each of said struts is a generally continuous wave along a line segment that is substantially parallel to the longitudinal axis.

26. (Previously presented) A stent according to claim 20, wherein in the expanded condition the curved portions of said struts become straighter.

27. (Previously presented) A stent according to claim 22, wherein the stent is fabricated from a hollow stainless steel tube.

28. (Previously presented) A stent according to claim 20, wherein the stent is fabricated from a hollow tube of shape memory material.

29. (Previously amended) A stent having a longitudinal axis and first and second ends with an intermediate section therebetween, the stent having an unexpanded and expanded configuration, the stent having axial flexibility in its unexpanded configuration and comprising:

a plurality of generally cylindrical rings disposed adjacent to one another along the longitudinal axis,

each of said rings connected to an immediately adjacent ring by a generally straight connector member;

each of said rings comprising a plurality of circumferentially spaced struts disposed generally along the longitudinal axis, each of said struts having a first end portion and a second end portion and a curved portion therebetween, ~~a~~ said curved end portion generally placed along said longitudinal axis, said first end portion being connected to a second end portion of a first immediately adjacent strut and said second end portion being connected to a first end portion of a second immediately adjacent strut.

30. (Previously presented) A stent according to claim 29, wherein said curved portion includes at least two curves.

31. (Previously presented) A stent according to claim 29, wherein the stent is a balloon expandable coronary stent.

32. (Previously presented) A stent according to claim 32, wherein the curved portions of said adjacent struts in each ring are generally in phase with one another.

33. (Previously presented) A stent according to claim 29, wherein the first and second end portions of said struts are curved.

34. (Previously presented) A stent according to claim 29, wherein each of said struts is a generally continuous wave along a line segment that is substantially parallel to the longitudinal axis.

35. (Previously presented) A stent according to claim 29, wherein in the expanded condition the curved portions of said struts become straighter.

36. (Previously presented) A stent according to claim 30, wherein the stent is fabricated from a stainless steel hollow tube.

37. (Previously presented) A stent according to claim 29, wherein the stent is fabricated from a hollow tube of shape memory material.

XI. Evidence Appendix

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X. Related Proceedings Appendix

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